Claims:

1. A material film production method, characterized in that the method comprises:

generating plasma including implantation target ions; applying a control voltage to an electric potential body in contact with said plasma to thereby control a density of said implantation target ions;

irradiating said plasma toward a depositionassistance substrate;

applying a bias voltage of a polarity opposite to that of said implantation target ions to said deposition-assistance substrate, to thereby provide said implantation target ions with acceleration energies, respectively; and

implanting said implantation target ions into a material film.

2. The material film production method of claim 1, characterized in that the method further comprises:

measuring an electric current flowing between said deposition-assistance substrate and a bias power supply for applying said bias voltage thereto, to thereby measure the density of said implantation target ions.

3. A material film production method, characterized in that the method comprises:

generating plasma including containment target ions and collision ions having the same polarity as said containment target ions;

irradiating said plasma toward a deposition-

assistance substrate;

applying a bias voltage of a polarity opposite to that of said containment target ions to said deposition-assistance substrate, to thereby provide said containment target ions and said collision ions with acceleration energies, respectively; and

colliding said collision ions with material molecules constituting a material film, to thereby cause said material molecules to internally contain said containment target ions, respectively.

4. The material film production apparatus of any one of claims 1 through 3, characterized in that the method further comprises:

depositing said material film on said depositionassistance substrate, simultaneously with the irradiation of said plasma toward said deposition-assistance substrate.

5. The material film production method of any one of claims 1 through 3, characterized in that the method further comprises:

irradiating said plasma onto said material film previously deposited on said deposition-assistance substrate.

6. A material film production method, characterized in that the method comprises:

generating plasma including collision ions;
irradiating said plasma toward a material film
previously deposited on said deposition-assistance

substrate;

simultaneously therewith, shooting vapor comprising containment target molecules toward said material film;

colliding said collision ions with material molecules constituting the material film; and

simultaneously therewith, causing said material molecules to internally contain said containment target molecules, respectively.

7. The material film production method of any one of claims 1 through 6, characterized in that the method further comprises:

transporting said generated plasma by a magnetic field to thereby irradiate said plasma toward said deposition-assistance substrate.

- 8. The material film production method of any one of claims 1 through 7, characterized in that said material film is a film comprising fullerene or nanotube.
- 9. The material film production method of any one of claims 1 through 5, 7, and 8, characterized in that said implantation target ions or said containment target ions are alkali metal ions, nitrogen ions, or halogen ions.
- 10. The material film production method of any one of claims 6 through 8, characterized in that said containment target substance is TTF, TDAE, TMTSF, pentacene, tetracene, anthracene, TCNQ, Alq_3 , or F_4TCNQ .
- 11. The material film production method of any one of claims 3 through 10, characterized in that said collision

ions each have a diameter of 3.0□ or larger.

- 12. The material film production method of claim 11, characterized in that said collision ions are fullerene positive ions or fullerene negative ions, respectively.
 - 13. A material film production apparatus comprising: a vacuum vessel;

magnetic field generation means;

plasma generation means for generating plasma including implantation target ions;

an electric potential body configured to control a density of said implantation target ions by applying a control voltage to said electric potential body;

- a deposition-assistance substrate for depositing a material film thereon; and
- a bias power supply configured to apply a bias voltage to said deposition-assistance substrate.
- 14. The material film production apparatus of claim 13, characterized in that said electric potential body comprises electroconductive wires in a lattice pattern.
 - 15. A material film production apparatus comprising: a vacuum vessel;

magnetic field generation means;

plasma generation means for generating plasma including containment target ions;

collision ion generation means for generating collision ions;

a deposition-assistance substrate for depositing a

material film thereon; and

- a bias power supply configured to apply a bias voltage to said deposition-assistance substrate.
 - 16. A material film production apparatus comprising:
 - a vacuum vessel;

magnetic field generation means;

plasma generation means for generating plasma including collision ions;

a deposition-assistance substrate for depositing a material film thereon;

containment target molecule shooting means for shooting vapor including containment target molecules to said deposition-assistance substrate; and

a bias power supply configured to apply a bias voltage to said deposition-assistance substrate.